JC17 Rec'd PCT/PTO 23 MAR 2005

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A process for preparing a compound of formula (I)

wherein

R⁴ and R⁵ are independently selected from hydrogen, halo, nitro, cyano, hydroxy, fluoromethyl, difluoromethyl, trifluoromethyl, trifluoromethoxy, amino, carboxy, carbamoyl, mercapto, sulphamoyl, ureido, C₁₋₆alkyl, C₂₋₆alkenyl, C₂₋₆alkynyl, C₁₋₆alkoxy, C₁₋₆alkanoyl, C₁₋₆alkanoyloxy, *N*-(C₁₋₆alkyl)amino, *N*,*N*-(C₁₋₆alkyl)₂carbamoyl, C₁₋₆alkanoylamino, *N*-(C₁₋₆alkyl)carbamoyl, *N*,*N*-(C₁₋₆alkyl)₂carbamoyl, C₁₋₆alkylS(O)_a wherein a is 0 to 2, C₁₋₆alkoxycarbonyl, C₁₋₆alkoxycarbonylamino, *N*-(C₁₋₆alkyl)sulphamoyl, *N*,*N*,-(C₁₋₆alkyl)₂sulphamoyl, C₁₋₆alkylsulphonylamino, and C₁₋₆alkylsulphonyl-*N*-(C₁₋₆alkyl)amino; and R⁶ is hydrogen or a protecting group, which process comprises cyclisation of a compound of formula (II)

wherein

 R^4 , R^5 , and R^6 are as defined in relation to formula (I); and R^7 is a nitrogen protecting group [[,]]; and removing protecting group R^7 , and thereafter if desired or necessary, removing any protecting group R^6 to obtain the corresponding carboxylic acid.

2. (Currently Amended) A process according to claim 1, wherein the protecting group R⁷ is removed during the same reaction step as the cyclisation.

3. (Currently Amended) A process according to claim 1, or claim 2 wherein in \underline{a} structure of formula (II), R^7 is a groups of sub-formula (i)

$$\bigcap_{R^8}$$

where in R⁸ is a straight chain alkyl group of from 1 to 6 carbon atoms.

- 4. (Currently Amended) A process according to any one of the preceding-claims 1, wherein R⁴ and R⁵ are independently selected from hydrogen, halo, nitro, cyano, fluoromethyl, difluoromethyl, trifluoromethyl, trifluoromethoxy, carboxy, carbamoyl, sulphamoyl, C₁₋₄alkyl, C₂₋₄alkenyl, C₂₋₄alkynyl, C₁₋₄alkoxy, C₁₋₄alkanoyl, and C₁₋₄alkanoyloxy.
- 5. (Original) A compound of formula (II) as defined in claim 1.
- 6. (Currently Amended) A process for preparing a compound according to claim 5, which comprises reacting a compound of formula (III)

where in

R⁴, R⁵ are as defined in claim 1, R⁶ and R⁷ are as defined in claim 1 R⁴ and R⁵ are independently selected from hydrogen, halo, nitro, cyano, hydroxy, fluoromethyl, difluoromethyl, trifluoromethyl, trifluoromethoxy, amino, carboxy, carbamoyl, mercapto, sulphamoyl, ureido, C₁₋₆alkyl, C₂₋₆alkenyl, C₂₋₆alkynyl, C₁₋₆alkoxy, C₁₋₆alkanoyl, C₁₋₆alkanoyloxy, N-(C₁₋₆alkyl)amino, N,N-(C₁₋₆alkyl)₂amino, C₁₋₆alkanoylamino, N-(C₁₋₆alkyl)carbamoyl, N,N-(C₁₋₆alkyl)₂carbamoyl, C₁₋₆alkylS(O)_a wherein a is 0 to 2, C₁₋₆alkoxycarbonyl, C₁₋₆alkoxycarbonylamino, N-(C₁₋₆alkyl)sulphamoyl, N,N,-(C₁₋₆alkyl)₂sulphamoyl, C₁₋₆alkylsulphonylamino, and C₁₋₆alkylsulphonyl-N-(C₁₋₆alkyl)amino;

R⁶ is hydrogen or a protecting group; and

R^7 is a nitrogen protecting group, with a compound of formula (IV) $LCH_2COOR^6 \eqno(IV)$

where L is a leaving group.

- 7. (Original) A compound of formula (III) as defined in claim 6.
- 8. (Currently Amended) A process for preparing a compound according to claim 7, which comprises reacting a compound of formula (V)

$$R^{4}$$
 R^{5}
 S
 R^{7}
 (V)

where in R⁴, R⁵ and R⁷ are as defined in claim 1R⁴ and R⁵ are independently selected from hydrogen, halo, nitro, cyano, hydroxy, fluoromethyl, difluoromethyl, trifluoromethyl, trifluo

 $N-(C_{1-6}alkyl)$ carbamoyl, $N,N-(C_{1-6}alkyl)_2$ carbamoyl, $C_{1-6}alkylS(O)_a$ wherein a is 0 to 2, $C_{1-6}alkoxycarbonyl$, $C_{1-6}alkoxycarbonyl$, $C_{1-6}alkyl)$ sulphamoyl,

 $N,N,-(C_{1-6}alkyl)_2$ sulphamoyl, $C_{1-6}alkyl$ sulphonylamino, and $C_{1-6}alkyl$ sulphonyl- $N-(C_{1-6}alkyl)$ amino; and

 \underline{R}^{7} is a nitrogen protecting group, with a compound of formula (VI)

where R⁹ and R¹⁰ are alkyl groups, in the presence of phosphorus oxychloride.

9. (Currently Amended) A process for preparing a compound of formula (III) as defined in claim 6 by reacting a compound of formula (VII)

wherein R⁴ and R⁵ are independently selected from hydrogen, halo, nitro, cyano, hydroxy, fluoromethyl, difluoromethyl, trifluoromethyl, trifluoromethoxy, amino, carboxy, carbamoyl, mercapto, sulphamoyl, ureido, C₁₋₆alkyl, C₂₋₆alkenyl, C₂₋₆alkynyl, C₁₋₆alkoxy, C₁₋₆alkanoyl, C₁₋₆alkanoyloxy, N-(C₁₋₆alkyl)amino, N,N-(C₁₋₆alkyl)₂amino, C₁₋₆alkanoylamino, N-(C₁₋₆alkyl)carbamoyl, N,N-(C₁₋₆alkyl)₂carbamoyl, C₁₋₆alkylS(O)_a wherein a is 0 to 2, C₁₋₆alkoxycarbonyl, C₁₋₆alkoxycarbonylamino, N-(C₁₋₆alkyl)sulphamoyl, N,N-(C₁₋₆alkyl)₂sulphamoyl, C₁₋₆alkylsulphonylamino, and C₁₋₆alkylsulphonyl-N-(C₁₋₆alkyl)amino; and are as in claim 1 and R⁹ and R¹⁰ are alkyl groupsas defined in claim 8, with a compound of formula (VIII)

$$(R^7)_2O$$
(VIII)

where R⁷ is a nitrogen protecting groupare as defined in claim 1.

- 10. (Currently Amended) A compound of formula (VII) as defined in claim 9.
- 11. (Currently Amended) A method according to claim 1, for the production of a second compound of formula (I) where R⁶ is hydrogen, and further comprising reacting the a first compound of formula (I) obtained with an amine of formula (XI),

$$\begin{array}{c|c}
R^{14} & R^{15} \\
N & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\
 & & \\$$

where R^{14} is selected from hydrogen and C_{1-8} alkyl[[,]]; m is an integer of from 0 to 4[[,]];

each R¹⁵ is the same or different and is selected from hydrogen, halo, nitro, cyano, hydroxy, amino, carboxy, carbamoyl, mercapto, sulphamoyl, ureido, C₁₋₆alkyl, C₂₋₆alkenyl, C₂₋₆alkynyl, C₁₋₆alkoxy, C₁₋₆alkanoyl, C₁₋₆alkanoyloxy, N-(C₁₋₆alkyl)amino, N,N-(C₁₋₆alkyl)₂amino, C₁₋₆alkanoylamino, N-(C₁₋₆alkyl)carbamoyl, N,N-(C₁₋₄alkyl)₂carbamoyl, C₁₋₆alkylS(O)_a wherein a is 0 to 2, C₁₋₆alkoxycarbonyl, C₁₋₆alkoxycarbonylamino, N-(C₁₋₆alkyl)sulphamoyl, N,N-(C₁₋₆alkyl)₂sulphamoyl, C₁₋₆alkylsulphonylamino, C₁₋₆alkylsulphonyl-N-(C₁₋₆alkyl)amino, C₃₋₈cycloalkyl, C₃₋₈cycloalkylC₁₋₆alkyl, aryl, arylC₁₋₆alkyl, heterocyclic group, and (heterocyclic group)C₁₋₆alkyl; wherein R¹⁵ may be optionally substituted on carbon by with one or more P groups, selected from P and wherein if said heterocyclic group contains an -NH- moiety, that nitrogen may be optionally substituted by with an R group-selected from R;

each R¹⁶ is the same or different and is selected from hydrogen and C₁₋₆alkyl;

R¹⁷ is selected from hydrogen, halo, nitro, cyano, hydroxy, fluoromethyl, difluoromethyl, trifluoromethyl, trifluoromethoxy, amino, carboxy, carbamoyl, mercapto, sulphamoyl, ureido, C₁₋₆alkyl, C₂₋₆alkenyl, C₂₋₆alkynyl, C₁₋₆alkoxy, C₁₋₆alkanoyl, C₁₋₆alkanoyloxy, N-(C₁₋₆alkyl)amino, N,N-(C₁₋₆alkyl)₂amino, C₁₋₆alkanoylamino, N-(C₁₋₆alkyl)carbamoyl, N,N-(C₁₋₆alkyl)₂carbamoyl, N-(C₁₋₆alkyl)-N-(C₁₋₆alkoxy)carbamoyl, C₁₋₆alkylS(O)_a wherein a is 0 to 2, C₁₋₆alkoxycarbonyl, C₁₋₆alkoxycarbonylamino, N-(C₁₋₆alkyl)sulphamoyl, N,N-(C₁₋₆alkyl)₂sulphamoyl, sulphamoylamino, N-(C₁₋₆alkyl)sulphamoylamino, N,N-(C₁₋₆alkyl)₂sulphamoylamino, C₁₋₆alkylsulphonylamino, C₁₋₆alkylsulphonyl-N-(C₁₋₆alkyl)amino, and a group -E-F-G-H;

wherein-E and G are independently selected from a direct bond, -O-, -S-, -SO-, -SO₂-, -OC(O)-, -C(O)O-, -C(O)-, -NR^a-, -NR^aC(O)-, -C(O)NR^a-, -SO₂NR^a-, -NR^aSO₂-, -NR^aC(O)NR^b-, -OC(O)NR^a-, -NR^aC(O)O-, -NR^aSO₂NR^b-, -SO₂NR^aC(O)-, and -C(O)NR^aSO₂-; wherein-R^a and R^b are independently selected from hydrogen or and C_{1-6} alkyl which is optionally substituted by with a V group V-;

F is C₁₋₆alkylene optionally substituted by one or more Q or a direct bond;

H is selected from aryl, C₃₋₈cycloalkyl, and heterocyclic group; wherein H may be optionally substituted on carbon by with one or more S groups, selected from S and wherein if said heterocyclic group contains an -NH- moiety, that nitrogen may be optionally substituted by with a T group selected from T;

P, S₂ and Q are independently selected from halo, nitro, cyano, hydroxy, trifluoromethyl, trifluoromethoxy, amino, carboxy, carbamoyl, mercapto, sulphamoyl, ureido, C_{1-6} alkyl,

C₂₋₆alkenyl, C₂₋₆alkynyl, C₁₋₆alkoxy, C₁₋₆alkanoyl, C₁₋₆alkanoyloxy, N-(C₁₋₆alkyl)amino, N,N-(C₁₋₆alkyl)₂amino, C₁₋₆alkanoylamino, N-(C₁₋₆alkyl)₂carbamoyl, N,N-(C₁₋₆alkyl)₂carbamoyl, N,N-(C₁₋₆alkyl)₂carbamoyl, N-(C₁₋₆alkyl)-N-(C₁₋₆alkoxycarbonyl, C₁₋₆alkyl)₂sulphamoyl, N,N-(C₁₋₆alkyl)₂sulphamoyl, C₁₋₆alkylsulphonylamino, C₁₋₆alkylsulphonyl-N-(C₁₋₆alkyl)amino, C₃₋₈cycloalkyl, aryl, and heterocyclic group; wherein P, S, and Q may be optionally and-independently substituted on carbon by-with one or more V groups selected from V-and wherein if said heterocyclic group contains an -NH- moiety, that nitrogen may be optionally substituted by a U group selected from U;

V is selected from halo, nitro, cyano, hydroxy, trifluoromethoxy, trifluoromethyl, amino, carboxy, carbamoyl, mercapto, sulphamoyl, methyl, ethyl, methoxy, ethoxy, acetyl, acetoxy, methylamino, ethylamino, dimethylamino, diethylamino, *N*-methyl-*N*-ethylamino, acetylamino, *N*-methylcarbamoyl, *N*-ethylcarbamoyl, *N*, acetylamino, *N*-methylcarbamoyl, *N*-diethylcarbamoyl, *N*-diethylcarbamoyl, *N*-methyl-*N*-ethylcarbamoyl, methylthio, ethylthio, methylsulphinyl, ethylsulphinyl, mesyl, ethylsulphonyl, methoxycarbonyl, ethoxycarbonyl, *N*-methylsulphamoyl, *N*-ethylsulphamoyl, *N*-othylsulphamoyl, morpholino, morpholinocarbonyl, *N*-benzylcarbamoyl, and 4-hydroxypiperidinocarbonyl;

R, T, and U are independently selected from $C_{1.4}$ alkyl, $C_{1.4}$ alkanoyl, $C_{1.4}$ alkylsulphonyl, $C_{1.4}$ alkoxycarbonyl, carbamoyl, N-($C_{1.4}$ alkyl)carbamoyl, N-($C_{1.4}$ alkyl)carbamoyl, phenyl, benzyl, benzyloxycarbonyl, benzoyl, and phenylsulphonyl; wherein R, T, and U may be optionally and-independently substituted on carbon by with one or more V groups selected from V;

to produce a compound of formula (XII)

$$\begin{array}{c|c}
R^4 & R^{14} & R^{15} \\
\hline
R^5 & N & Q & R^{16}
\end{array}$$
(XII)

where R⁴, R⁵, R¹⁵, R¹⁶, R¹⁷, and m are as defined above, or a pharmaceutically acceptable salt or an *in vivo* hydrolysable ester thereof.